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Quality of life and occurrence of depression under chemotherapy in patients suffering from lung carcinoma

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Abstract

Introduction and objective. In Poland, lung carcinoma is the most frequent malignant neoplasm in men and the third most frequent in women. The neoplastic disease causes enormous psychic stress and may lead to depressive reactions. The purpose of this research was to assess the quality of life and the occurrence of depression in patients suffering from lung neoplasms and undergoing chemotherapy.

Materials and method. The research covered 102 patients (test group TG) with lung carcinoma and undergoing chemotherapy. In the research, standardised questionnaires: EORTC-QLQ-C30, Beck Depression Inventory and a matrix developed by the researcher were applied. The control group (CG) consisted of 60 healthy people who were examined by the Beck Depression Inventory.

Results. A highly statistically significant dependency was found ($p<0.01$) between the general quality of life and the occurrence of depression. 51.5% of those examined with a very low level of general quality of life had the symptoms of severe depression. Those examined who had a very high level of general quality of life did not have features of severe depression. A statistically significant dependency ($p<0.01$) was ascertained between the occurrence of depression and the health condition of those examined.

Conclusions. Depression symptoms occur more frequently and with greater intensity in patients suffering from lung neoplasm, compared to the group of healthy people ($p<0.01$). A statistically significant connection between marital status, place of residence, and assessment of quality of life was found out ($p<0.05$).

Key words

quality of life, lung carcinoma, depression, Beck Depression Inventory

INTRODUCTION

Lung carcinoma is a serious problem on a global scale for contemporary medicine, and comes within the group of the most popular and worst prognosing neoplasms [1, 2].

In Poland, lung carcinoma is the most frequent malignant neoplasm in men, and the third most frequent in women [3]. About 90% of men and 80% of women fall ill with the disease as a consequence of cigarette addiction [4].

Although the data from the examination of the intensity of cigarette addiction testify that residents of rural areas in Poland smoke more, the total survival of patients with diagnosed lung carcinoma, however, from both urban and rural environments are similar and comparable to the European average [5].

Persons suffering from lung carcinoma, similarly to other oncological patients, have problems with the acceptance of their disease before beginning treatment. Apart from personal predispositions, a material role in the psychological reaction is played by personal symptoms and the period in which they occur. Lung carcinoma develops deceitfully and non-specific symptoms are neglected. With most patients, the disease is diagnosed when it is already at the stage of significant progress, which excludes the potential to suggest radical treatment to this group of patients [6]. At the moment of diagnosing, the patients feel it as a 'condemnation' and try to find the answer to the question 'why me?' – through an analysis of carcinoma disease history in the family, and in the professional environment. They have either a strong sense of guilt because of cigarette smoking or a sense of being wronged when they have never smoked. These reactions are accompanied by fear of the effects of the disease (in the social understanding: pain and dying), and the results of treatment (surgical, chemical or radiation) [7].

The patient's life changes dramatically from the moment lung carcinoma is diagnosed. First of all, physical fitness is reduced, then family and social contacts are limited (in particular for those who are hospitalised), a feeling of loss of a part of oneself (in the case of an operation), and mental

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discomfort, most frequently of the nature of depressive or fright reaction. Because of the specific stereotype of social thinking, associating the diagnosis with death in pain, the carcinoma inflicts an enormous psychic stress and may lead to depressive reactions, even when it does not cause nagging, physical ailments, and does not limit motor or social activities. Patients going through depression develop also a sense of guilt for their condition and helplessness in the difficult situation. Their negative assessment of the previous life prevails, they are no longer interested in anything, and are under an oppressing sense of helplessness and hopelessness which reduces significantly their quality of life. The treatment for depression in the case of carcinomous disease is very important, as its final effect may be the patient's giving up any further oncological treatment, worse relations with the family and medical personnel, and also suicidal attempts [8]. The main purpose of the research. The **Objective.** The primary aim of the study was to assess the quality of life and the occurrence of depressive disorder in patients suffering from the lung cancer and undergoing chemotherapy. Additionally, assessment of the occurrence and intensity of the depressive disorder in the patients depends on the period of chemotherapeutic treatment, age of the patients, place of residence, gender and education.

MATERIALS AND METHOD

The research was conducted in two groups of patients (TG and CG) and covered 102 patients (test group TG) with diagnosed lung carcinoma in various degrees of progress, hospitalised in the Pulmonological Ward and Ward for Palliative Care and Chemotherapy in the Independent Public Hospital in Kraśnik, south-east Poland, during the period from June 2010 – March 2011.

The control group (CG) consisted of 60 healthy people, who were tested by Beck Depression Inventory. Currently, they were not being treated for any chronic somatic or psychic disease. The basis to qualify to this group was a detailed health interview, excluding oncological history, as well as diseases with a distinct psychosomatic background. Participation in the research was voluntary and anonymous. The tests were conducted after a positive opinion was given by the Bioethical Commission at the Medical University of Lublin.

Standardised questionnaires: EORTC-QLQ-C30 (version 3.0) (European Organization for Research and Treatment of Cancer Core Questionnaire) [9], the Beck Depression Inventory (BDI) [10] and the matrix of the researcher's own authorship were applied.

The EORTC-QLQ-C30 (version 3.0) questionnaire – serves to examine the summary sense of being healthy and the assessment of physical, emotional and social functioning of patients suffering from cancer. It is the most frequently used tool to measure the quality of life related to health among patients with lung carcinoma, and used widely in clinical research on new drugs [11].

The questionnaire contains 30 questions grouped according to scales of functioning assessment (physical, in social roles and at work, cognitive, emotional and social), the impact of symptoms on the quality of life (pain, tiredness, nausea and vomiting, dyspnea, insomnia, loss of appetite, constipation and diarrhea), impact of the disease on the financial situation, and measurement of the general quality of life and general health condition [12,13]. For the purposes of the research, elements of the EORTC-QLQ-C30 questionnaire were used in the scope of general quality of life measurement and general condition of health.

The Beck Depression Inventory serves to assess the presence and intensity of symptoms of depression. Developed by an American psychiatrist, Aaron Temkin, the Beck inventory was published in 1961. The inventory is composed of 21 items related to the most frequently observed depression symptoms: depressed mood, pessimism, self-accusations, loss of satisfaction, sense of guilt, need to be punished, self-dissatisfaction, inferiority complex, suicidal thoughts, weeping, nervousness, loss of interest in others, difficulties in making decisions, negative picture of own body, loss of ability to work, sleep disorders, tiredness, loss of appetite, loss of body weight, worrying about one's own health, and loss of sex drive. Within each category there are four possible answers which define the intensity of a given symptom, starting from its non-existence, up to a very significant intensity (0–3 points) [10].

A standard key to EORTC-QLQ-C30 (3.0) questionnaires was used for analysis together with templates standardising the results in the scale from 0–100. In the questions about the health condition and the quality of life, the answers are given in the scale from 1 ('very bad') up to 7 ('perfect'), and a higher point value means a better assessment of the health condition and the quality of life. Similarly, in the general assessment of the quality of life, a higher point result means a better total assessment of the quality of life. In the case of general assessment of quality of life, it was assumed that the point result in the global scale of the quality of life should be assessed according to a 4-degree scale in the following way: 0–25 points – very low quality of life, 26–50 points – low quality of life, 51–75 points – high quality of life, 76–100 points – very high quality of life. Additionally, the arithmetic average was applied to the severe scale 1–7 where 1 meant the lowest assessment, and 7 the highest one [9,12,13].

The level of depression was calculated according to various standards (for instance, the German standard or American standard). In this research, the following interpretation of results was adopted: 0–9 points – no depression nor mood lowering, 10–27 points – moderate depression, 28 and more points – severe depression [12].

Per cent indicators were also applied to a detailed description of questions, making up individual scales. To test statistically significant dependences between the variables, the Chi-square test was used. The test probability at a level $p<0.05$ was assumed as material, and the test probability of $p<0.01$ as very significant. The results were analysed with the help of SPSS 14.0 PL software for Windows.

Characteristics of the tested group. The clinical group consisted of 102 patients treated for lung carcinoma. They all had the result of a histopathological test confirming the diagnosed carcinoma, and were hospitalised for at least 14 days. Most of them were men (51.0%). The average age of those examined was 53.68±12.18 years. The biggest group consisted of respondents aged between 51–60 (32.4%), the least numerous group of patients was aged between 18–30 (3.9%). 44.1% of those tested had college education, and 15.7% university education. A decisive majority of those tested were married (73.5%), the fewest of them declared to

be bachelors/spinsters (11.8%). They resided in towns (54.9%). They had college (44.1%) or lower (40.2%) education. 84.3% lived with the family. In the group of those who were sick, a larger proportion of pensioners and disability pensioners (64.7%) was found than in other groups. A little over two-thirds of those tested (67.6%) assessed their material situation as average. All those tested (100.0%) were undergoing chemotherapy. The average period of taking cytostatic drugs in the patient group was 6.36 months. The largest number of those tested (72.5%) took cytostatic drugs for a period shorter than half a year. The least numerous were the patient group who took cytostatic drugs for a period ranging from 13–18 months (2.0%) and more than 24 months (2.0%).

Detailed data related to the socio-demographic features are presented in Table 1.

Table 1. Demographic variables in tested groups

Socio-demographic factors	Tested population				p
	TG		CG		
Gender	N	%	N	%	
Female	52	51	28	47	p=0.762 $\chi^2 = 0.09$
Male	50	49	32	53	p=0.766 $\chi^2 = 0.9$
AGE					
Age 18–30	4	3.9	4	6.6	p=0.546 $\chi^2 = 0.36$
Age 31–40	8	7.8	10	16.7	p=0.110 $\chi^2 = 2.56$
Age 41–50	30	29.4	9	15	p=0.050 $\chi^2 = 3.84$
Age 51–60	33	32.4	12	20	p=0.1272 $\chi^2 = 2.33$
Age 51–60	27	26.5	25	41.7	p=0.092 $\chi^2 = 2.84$
EDUCATION					
Elementary/vocational	41	40.2	18	30	p=0.282 $\chi^2 = 1.16$
Secondary	45	44.1	23	38.3	p=0.581 $\chi^2 = 0.30$
University	16	15.7	19	31.7	p=0.304 $\chi^2 = 4.69$
CIVIL STATUS					
Bachelor/spinster	16	15.7	18	30.0	p=0.055 $\chi^2 = 3.67$
Married	71	69.6	29	48.3	p=0.053 $\chi^2 = 3.74$
Single	15	14.7	13	21.7	p=0.324 $\chi^2 = 0.97$
PLACE OF RESIDENCE					
Town	56	54.9	38	63.3	p=0.519 $\chi^2 = 0.42$
Village	46	45.1	22	36.7	p=0.439 $\chi^2 = 0.60$
RESIDING					
On their own	16	15.7	18	30	p=0.055 $\chi^2 = 3.67$
With the family	86	84.3	42	70	p=0.295 $\chi^2 = 1.10$
SOURCE OF INCOME					
Employment	26	25.5	26	43.3	p=0.054 $\chi^2 = 3.71$
Disability pension/old age pension	66	64.7	28	46.7	p=0.108 $\chi^2 = 2.58$
)ther	10	9.8	6	10	p=0.823 $\chi^2 = 0.05$

Source: Own data based on research

RESULTS

The general quality of life was assessed in the population of lung carcinoma patients. The indicators of this value were composed of questions in which the respondents assessed subjectively their general condition of health and quality of life. Through assessing the general quality of life, the total arithmetic average of 3.565 was obtained, and in the case of health condition assessment – 3.57. The average point result in the total scale of the quality of life of those under examination was 42.73±18.38 (mediana 50.00), which means low quality of life of the patients examined. The lowest general quality of life (0) was declared by two patients (2.0%), and the highest (100) by one person (1.0%).

Analysis of the research material allowed familiarisation with the occurrence and intensity of depression symptoms amongst 102 patients with diagnosed lung cancer (TG), and comparison with the control group (CG). The results obtained in the Beck Inventory were correlated with the results of the measurement of the general quality of life of the patients.

Among those examined with a very low level of general quality of life, 51.5% showed symptoms of severe depression, whereas among those examined with a very high level of general quality of life, no features of severe depression were revealed. The distribution of answers and the results of the Chi-square tests indicate a highly statistically significant dependence ($p<0.01$) between the general quality of life and the occurrence of depression. In the control group (CG) no statistically significant differences were indicated (Tab. 2).

Examining 102 lung carcinoma patients from the viewpoint of depressive tendencies, these tendencies were measured among 60 healthy, working and studying people, and then compared with the results of the sick. The structure of the test group from the viewpoint of depressive tendencies is presented in Graphs 1 and 2.

Among 162 people examined with the use of Beck Depression Inventory, 38.9% of those examined did not show depression or lowered mood, 38.3% had features of moderate depression and 22.8% had symptoms of severe depression (Tab. 3).

The research indicated that among the patients, the largest per cent (43.1%) constituted people with symptoms of moderate depression. The symptoms of severe depression were revealed in 32.4% of the examined patients. In the healthy group. no features of depression were found out in 93.3 % of those examined, however, the symptoms of moderate depression were shown by 6.7% of respondents. A highly statistically significant dependence ($p<0.01$) between the occurrence of depression and the health condition of those examined was revealed (Tab. 4).

The general quality of life was examined in the group of the sick and in the group of the healthy. Assessing the general quality of life, a global arithmetic average was obtained of 3.56. A slightly higher average indicator was noted in the case of health condition assessed as 3.57. Assessing the quality of life of those examined, owing to the application of raw results

Table 2. General quality of life in the examined group and the symptoms of depression

Level of general quality of life			Depression disorder: No depression nor depressed mood	Moderate depression	Severe depression	Total	Chi-square
Very low	TG	N	1	1	17	19	
		%	*4.0*	*2.3*	*51.5*	*18.6*	*
	CG	N	3	1	0	4	
		%	6.1	9.1	*0*	6.7	
Low	TG	N	15	36	13	64	
		%	*60.0*	*81.8*	*39.4*	*62.7*	*
	CG	N	19	6	0	25	
		%	38.8	54.5	0	41.7	
High	TG	N	7	6	3	16	
		%	*28.0*	*13.6*	*9.1*	*15.7*	*
	CG	N	21	3	0	24	
		%	42.9	27.3	0	40.0	
Very high	TG	N	2	1	0	3	
		%	*8.0*	*2.3*	*0*	*2.9*	
	CG	N	6	1	0	7	*
		%	12.2	9.1	0	11.6	
General	TG	N	25	44	33	102	χ^2 = 40.462 df = 6 p < 0.0001
		%	*100.0*	*100.0*	*100.0*	*100.0*	
	CG	N	49	11	0	60	
		%	*100.0*	*100.0*	---	*100.0*	

* – statistical significance of depression disorder in individual profiles between tested group (TG) and control group (CG) p<0.05.
Source: own data based on research

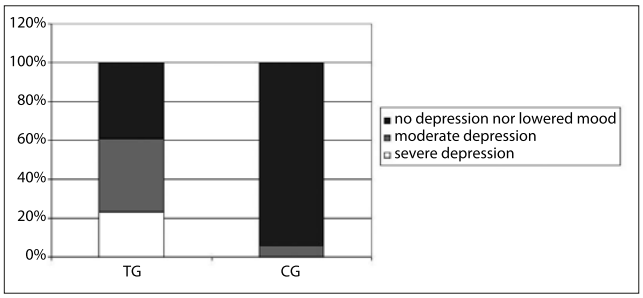

Figure 1. Depression disorder in test group vs. control group
Source: own data based on research

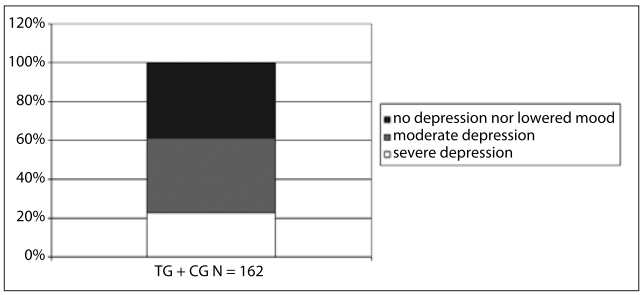

Figure 2. Group structure
Source: own data based on research

standardisation by their transformation to a 100 point scale, ranging from 0–100, an average of 42.73 was obtained with the standard deviation ± at a level of 18.38, medina 50.00, and range from 0–100 points. The results indicate a low level of general quality of life (Graph 3). For the purposes

Table 3. Level of depression in the tested group

DEPRESSION DISORDER	Tested population: TG N	TG %	CG N	CG %	p
No depression nor lowered mood	63	*38.9*	56	93.3	p=0.003 χ^2 = 8.78
Moderate depression	62	*38.3*	4	6.7	p<0.0001 χ^2 = 20.0
Severe depression	37	*22.8*	0	0	---

Source: own data based on research

Table 4. Condition of health and depression

Condition of depression		Condition of health: Healthy	Sick	Total	Chi-square
Without depression nor lowered mood	N	38	25	63	χ^2 = 27.259
	% of health condition	*63.3*	*24.5*	*38.9*	df = 2
Moderate depression	N	18	44	62	p < 0.0001
	% of health condition	*30.0*	*43.1*	*38.3*	
Severe depression	N	4	33	37	
	% of health condition	*6.7*	*32.4*	*22.8*	
Total	N	60	102	162	
	% of health condition	*100.0*	*100.0*	*100.0*	

Source: own data based on research

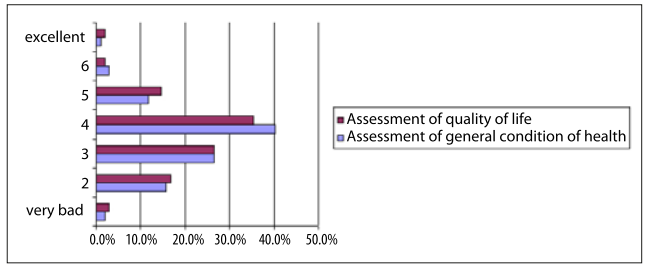

Figure 3. General quality of life
Source: own data based on research

of analysis, the quality of life was assessed depending upon socio-demographic factors: age, civil status and residence. Statistical analysis of the examined variables did not show statistically significant differences in the general assessment of quality of life and age of those examined (Tab. 5).

Analysis showed that there was a statistically significant difference (p<0.05) in the results of the quality of life measurement and marital status. In the case of unmarried (single) people, in 37.0% of cases, a very low level of general

Table 5. Age and level of general quality of life of those examined.

Age		Level of general quality of life: Very low	Low	High	Very high	General	Chi-square
Up to 60 years	N	10	45	14	2	71	χ^2 = 5.037
	% age	*14.1*	*63.4*	*19.7*	*2.8*	*100.0*	df = 3
Over 60 years	N	9	19	2	1	31	p = 0.169
	% age	*29.0*	*61.3*	*6.5*	*3.2*	*100.0*	
Total	N	19	64	16	3	102	
	% age	*18.6*	*62.7*	*15.7*	*2.9*	*100.0*	

Source: own data based on the research

Table 6. Marital status and level of general quality of life of those examined

Marital status		Level of general quality of life				Total	Chi-square
		very low	low	High	very high		
Un-married	N	10	15	2	0	27	$\chi^2 = 9.668$
	% marital status	*37.0*	*55.6*	*7.4*	*0*	*100.0*	df = 3
Married	N	9	49	14	3	75	p = 0.02
	% marital status	*12.0*	*65.3*	*18.7*	*4.0*	*100.0*	
Total	N	19	64	16	3	102	
	% marital status	*18.6*	*62.7*	*15.7*	*2.9*	*100.0*	

Source: own data based on the research

quality of life was discopvered, and in the case of those who were married – in 12.0% of cases. A prevailing group in the synthetical categories of marital status consisted of those with a low level of general quality of life (Tab. 6).

In the case of dependency between place of residence and general quality of life, a statistically significant difference ($p<0.05$) was found in the results of quality of life measurement due to the residence of those examined. In the case of people living on their own, in 50.0% of cases a very low level of quality of life was discovered. In the case of people residing with the family, only 12.8% of respondents had the lowest level of quality of life (Tab. 7).

Table 7. Residence and level of general quality of life of those examined.

Residence		Level of general quality of life				Total	Chi-square
		Very low	Low	High	Very high		
Alone	N	8	8	0	0	16	$\chi^2 = 14.053$
	% from residence	*50.0*	*50.0*	*0*	*0*	*100.0*	df = 3
With family	N	11	56	16	3	86	p = 0.003
	% from residence	*12.8*	*65.1*	*18.6*	*3.5*	*100.0*	
Total	N	19	64	16	3	102	
	% from residence	*18.6*	*62.7*	*15.7*	*2.9*	*100.0*	

Source: own data based on the research

Period of taking cytostatic drugs and the intensity of depression symptoms. During the analysis of the research, the dependency between the level of depression and the period of taking cytostatic drugs was checked. For this purpose, analysis was made of the correlation between the indicator of depression level and the period of chemotherapy.

It turned out that there was no statistically significant difference ($p>0.05$) in the results of the quality of life measurement with regard to the period cytostatic drugs were taken. Detailed results for each time span reflect the general tendencies in the examined population (Tab. 8).

Table 8. Period of cytostatic drugs taking and the level of general quality of life of those examined

Period of cytostatic drugs taking		Level of depression				Total	Chi-square
		Very low	Low	High	Very high		
Up to 6 months	N	11	49	11	3	74	$\chi^2 = 8.497$
	% period of cytostatics taking	*14.9*	*66.2*	*14.9*	*4.1*	*100.0*	df = 12
7 - 12 months	N	5	10	4	0	19	p = 0.745
	% period of cytostatics taking	*26.3*	*52.6*	*21.1*	*0*	*100.0*	
13 - 18 months	N	0	1	1	0	2	
	% period of cytostatics taking	*0*	*50.0*	*50.0*	*0*	*100.0*	
19 - 24 months	N	2	3	0	0	5	
	% period of cytostatics taking	*40.0*	*60.0*	*0*	*0*	*100.0*	
Longer than 24 months	N	1	1	0	0	2	
	% period of cytostatics taking	*50.0*	*50.0*	*0*	*0*	*100.0*	
Total	N	19	64	16	3	102	
	% period of cytostatics taking	*18.6*	*62.7*	*15.7*	*2.9*	*100.0*	

Source: own data based on the research

DISCUSSION

Lung neoplasms make up a non-uniform group from the histological and clinical aspects. The clinical-pathological division runs between non-small cell lung carcinoma (NSCLC), which makes up about 80%, and small cell lung carcinoma (SCLC) which makes up the remaining 20%. In the author's research, the average results of the general quality of life of lung neoplasm patients treated by chemotherapy was 3.56, and in the case of the assessment of their health condition – 3.57. Nowicki et al. examined with the use of the EORTC-QLQ-C30 questionnaire the general quality of life and the general condition of health in a group of 29 patients treated surgically for lung cancer. The average results thus obtained were a little higher than in the author's research, and amounted to 3.90 for the global assessment of the quality of life and 3.83 for the general assessment of health condition [14]. Similarly, Zielińska-Więczkowska and Betłakowski in studies conducted with the use of the EORTC-QLQ-C30 questionnaire in a group of 105 neoplasm patients during chemotherapy, obtained higher average results for the general quality of life and general condition of health, which amounted correspondingly to 4.03 and 3.90 [15].

The diagnosis of lung cancer and the symptoms related to it, together with the therapy, worsen the quality of life of patients – Larsson et al. proved clinically and statistically, significant differences in the area of nearly all elements of the scale related to the symptoms and functioning of the EORT-QLQ–C30 questionnaire, between the group of the sick with non-small cell lung carcinoma and the general population [16]. In the author's data, a highly statistically significant reverse dependency ($p<0.01$) between the general quality of life and the level of depression was ascertained – the worse the quality of lung carcinoma patients life, the bigger the intensity of depression symptoms. In the examined group with a very low level of general quality of life, as much as 89.5% showed symptoms of severe depression. Among those examined with a very high level of general quality of life, none of the patients showed symptoms of severe depression. Similarly, Mess et al., in the research conducted in a group of 50 patients with lung carcinoma, ascertained the existence of a strong negative correlation between the level of depression in the Zung scale and the general quality of life assessed according to the

checklist of the RSCL (Rotterdam Symptom Checklist) [13]. In turn, Arrieta et al., in their prospective study confirmed a statistically significant correlation between the degree of fear and intensity of depression among patients with advanced, non-small cell lung carcinoma, and a reduction in the results of quality of life in the questionnaire. Additionally, the authors noticed that the patients with depression showed significant shorter periods of total survival, compared to those patients who had no depressive disorder [17]. Research of Szymczak showed no statistically significant difference in the intensity of depressive symptoms assessed by the Beck Depression Inventory in a group of 37 patients with lung carcinoma waiting for torraco-surgical treatment, and in a group of 32 healthy people [18].

In the author's own examination, patients with lung carcinoma show depressive tendency much more frequently than healthy people assessed by the Beck Depression Inventory. Among patients with lung carcinoma, the features of severe depression were discovered in 32.4%, moderate depression in 43.1%, and no depression in 24.5% of those examined. Among the healthy people examined, a result indicating severe depression was revealed in 6.7% and 30% showed moderate symptoms of depression; no features of depression were revealed in 63.3%. A highly statistically significant dependency ($p<0.01$) was revealed between the start of health of the respondents and the occurrence of symptoms of depression.n

Conflicting results were obtained by Zielińska-Więczkowska and Betłakowski in research conducted in a group of 105 patients with carcinoma under chemotherapy, where the average results of self-assessments according to Zung depression scale were 35.20±8.81 (min. 20, max. 58 points). In the research discussed, 93.3% patients had no psychopatological symptoms, moderate depression occurred in 6.7% of those examined, and no case of severe depression was found [19].

Mess et al., in their research on a group of 50 patients with lung carcinoma, found the occurrence of symptoms of light depression, according to Zung scale, in 23 people (46.0%) of those examined [13]. In another paper, Mess et al., in a group of 50 patients in the terminal stage of cancer, assessed by the Zung depression scale, showed the occurrence of light depression in 40.0% of those examined, moderate in 30.0%, and severe in 4.0% of the patients [20]. Nowicki and Rządkowska in a group of 100 patients with malignant cancer, using their own questionnaire based on Beck Depression Inventory, found in 36% the lowering of mood of light intensity, in 4% – depression of light intensity, and in only 1% – severe depression, and in 59.0% there were no symptoms of depression [21]. Other sources indicate the occurrence of depression symptoms in over 98.0% of patients suffering from lung carcinoma, which means a reduction in the quality of life in this group of patients [22]. In other publications, the occurrence of variously intensified depression symptoms were proved in 15.0%-44.0% of the sick after being diagnosed with lung carcinoma [23]. Results of the research obtained by Sharp and Strong indicate that this disorder is diagnosed in only 49.0% of oncological patients suffering from depression. In 42.0%, treatment for depression is administered, which proves to be efficient in only 15.0% of patients [24].

In the research dealing with the problems of the occurrence of depression in the group of patients with lung carcinoma, a strong connection is indicated between the depression and the personal features and way of coping with stress. To identify quickly the bio-psychosocial factors of depression risk, screening tests become helpful, for instance, the Hospital Anxiety and Depression Scale (HADS) [25].

CONCLUSIONS

1. The quality of life of patients with lung carcinoma is lower compared to the group of healthy people. Carcinoma disease has a negative impact on the physical, mental and social functioning of the patient.
2. The lower quality of life of patients with lung carcinoma has an impact on the bigger intensity of the symptoms of depression ($p<0.01$).
3. Depression symptoms occur more frequently and with bigger intensity in patients with lung carcinoma, compared to healthy people ($p<0.01$).
4. A statistically significant correlation has been proved between marital status, place of residence, and assessment of the quality of life ($p<0.05$). People residing with the family and are married declare a higher quality of life compared to solitary persons.
5. The period of taking cytostatic drugs had no impact on the level of depression in those examined.
6. Diagnosing cancer is linked to negative emotions, which justifies the application of simple tools to assess the occurrence and intensity of the symptoms of depression.

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